EAST Browser - L15: (47) reverse adj... | US 5107387 A | Tag: S | Doc: 32/47 | Format : KWIC

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L15: (47) reverse adj... | US 5107387 | Tag: S | Doc: 32/47 | "Full"

US005107387A

United States Patent [19]

Ortun

[11] Patent Number: 5,107,387

[45] Date of Patent: Apr. 21, 1992

[54] FUSE-PROTECTED RC CONTROLLER

[76] Inventor: Kevin R. Ortun, Tekin Electronics, Inc., 970 Calle Negocio, San Clemente, Calif. 92672

[21] Appl. No.: 622,736

[22] Filed: Dec. 6, 1990

[51] Int. Cl.5 .... H02H 7/09

[52] U.S. Cl. 361/23; 361/104; 337/187; 337/158; 318/16; 318/139

[58] Field of Search 361/23, 62, 84, 104; 337/187, 197, 198, 216; 307/127; 318/6, 16, 139, 266, 370, 374, 371, 373, 293

[56] References Cited

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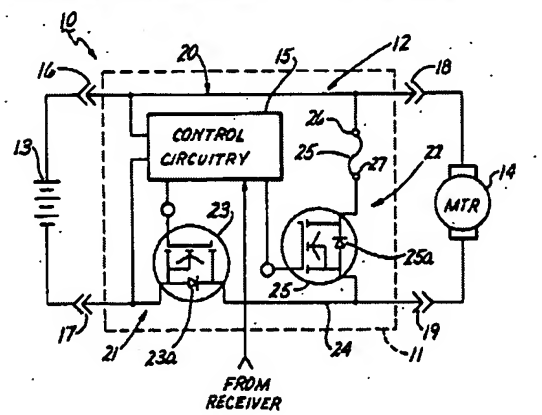
4,430,377	2/1984	Palmer	318/375

Primary Examiner—Steven L. Stephan
Assistant Examiner—Adolf Berhane
Attorney, Agent, or Firm—Loyal M. Hanson

[57] ABSTRACT

A controller includes a circuitboard with a circuit for variably coupling power from a battery to the drive motor of a radio controlled model. The circuit has positive and negative input terminals for connection to the battery and an output port for connection to the motor. The circuit also includes braking componentry that produces a low resistance path in parallel with the motor in order to brake the motor under operator control, and the circuit includes a fuse in series with the braking componentry for protecting it from damage in the event the input terminals are connected to the battery with the polarity reversed. An inventive fuse is disclosed that may be used with the controller or elsewhere. The fuse includes a conductive element of predetermined current rating and first and second connectors connected to the conductive element that are configured to plug onto first and second terminal posts with interference fits so that any component fatigue is substantially restricted to the fuse. The fuse may be fabricated from separate interconnected components or take the form of a sheet of conductive material that has been stamped and rolled or otherwise shaped into a fuse element. The fuse element may snap into a housing that facilitates handling.

15 Claims, 3 Drawing Sheets



L15: (47) reverse adj... | US 5107387 A | Tag: S | Doc: 32/47 | Format : KWIC

US-PAT-NO: 5107387

DOCUMENT-IDENTIFIER: US 5107387 A

TITLE: Fuse-protected RC controller

Brief Summary Text - BSTX (10):

This invention solves the problem outlined above by providing an RC controller that has a pluggable fuse on the controller circuitboard. The fuse is so located that it protects controller components from a reverse polarity battery connection without introducing an undesired voltage drop between the battery and the motor. In addition, one embodiment includes a fuse that has its own spring clips for gripping circuitboard terminals posts. Including them as part of the fuse insures fresh gripping action each time the fuse is replaced.

Detailed Description Text - DETX (6):

The controller 10, however, fuses just the componentry identified as vulnerable to a reverse polarity connection. In that regard, the motor 14 usually remains undamaged by a reverse polarity connection. It just rotates backwards at high speed. As for the control circuitry 15, it derives power from the battery 13, but it can be provided with diode protection against a reverse polarity connection.

Detailed Description Text - DETX (19):

Thus, the invention provides an RC controller that has a pluggable fuse on the controller circuitboard. The fuse is so located that it protects controller components from a reverse polarity battery connection without introducing an undesired voltage drop between the battery and the motor. In addition, one embodiment includes a fuse that has its own spring clips for gripping circuitboard terminals posts, and that results in fresh gripping action each time the fuse is replaced.

Details | Text | Image | HTML | KWIC

						controller variations	
31			US 5125067 A	19920623	37	Motor controls, refrigeration systems and	388/
32			US 5107387 A	19920421	7	Fuse-protected RC controller	361/
33			US 4807277 A	19890221	7	Remotely activated switching apparatus	379/

EAST Browser - L15: (47) reverse adj... | US 5107387 A | Tag: S | Doc: 32/47 | Format : FULL

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L15: (47) reverse adj... | US 5107387 | Tag: S | Doc: 32/47 | Full

US005107387A

United States Patent [19]

Orton

[11] Patent Number: 5,107,387

[45] Date of Patent: Apr. 21, 1992

[54] FUSE-PROTECTED RC CONTROLLER

[76] Inventor: Kevin R. Orton, Tekin Electronics, Inc., 970 Calle Negocio, San Clemente, Calif. 92672

[21] Appl. No.: 622,716

[22] Filed: Dec. 6, 1990

[51] Int. Cl.⁵ .... [illegible] 7/00

[52] U.S. Cl. .... 361/[illegible]; 361/104; 337/[illegible]; 337/[illegible]; 318/[illegible]; 318/[illegible]

[58] Field of Search .... 361/[illegible]; 337/[illegible]; 307/[illegible]; 318/[illegible]

[56] References Cited

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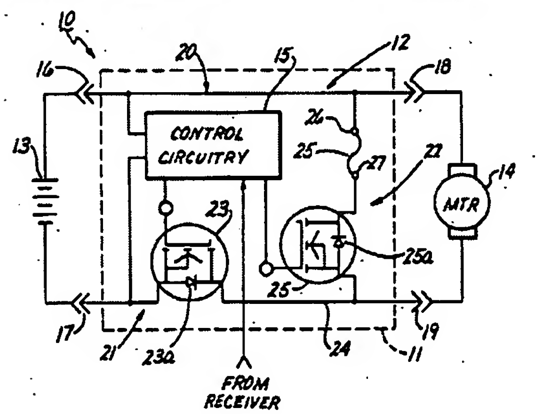
4,144,[illegible]	[illegible]/1979	Walte	337/215
4,301,[illegible]	12/1981	Lorenz	[illegible]
4,404,[illegible]	[illegible]/1983	McClellan	318/[illegible]
4,430,[illegible]	[illegible]/1984	Palmer	318/[illegible]

Primary Examiner—Steven L. Stephan
Assistant Examiner—Adolf Berhane
Attorney, Agent, or Firm—Loyal M. Hanson

[57] ABSTRACT

A controller includes a circuitboard with a circuit for variably coupling power from a battery to the drive motor of a radio controlled model. The circuit has positive and negative input terminals for connection to the battery and an output port for connection to the motor. The circuit also includes braking componentry that produces a low resistance path in parallel with the motor in order to brake the motor under operator control, and the circuit includes a fuse in series with the braking componentry for protecting it from damage in the event the input terminals are connected to the battery with the polarity reversed. An inventive fuse is disclosed that may be used with the controller or elsewhere. The fuse includes a conductive element of predetermined current rating and first and second connectors connected to the conductive element that are configured to plug onto first and second terminal posts with interference fit so that any component fatigue is substantially restricted to the fuse. The fuse may be fabricated from separate interconnected components or take the form of a sheet of conductive material that has been stamped and rolled or otherwise shaped into a fuse element. The fuse element may snap into a housing that facilitates handling.

13 Claims, 3 Drawing Sheets



L15: (47) reverse adj... | US 5107387 A | Tag: S | Doc: 32/47 | Format : FULL

(4) Considering the circuit 12 in further detail, it has an input port with a positive terminal 16 for connection to the positive lead of the battery 13 and a negative terminal 17 for connection to the negative lead of the battery 13. It also includes an output port for connection to the motor 14, the illustrated embodiment having first and second terminals 18 and 19 for that purpose. A first unfused leg 20 directly connects the positive input terminal 16 to the first output terminal 18 and it may be a heavy trace on the circuitboard 12 that provides a low resistance path for the relative large current requirements of the motor 14.

(5) Some existing attempts to provide fuse protection placed a fuse either in the first leg 20 or between one of the positive and negative terminals 16 and 17 and the battery 13. But doing so results in an increase in resistance between the battery 13 and the motor 14. That, in turn, produces an undesired voltage drop because of the high current drawn by the motor 14.

(6) The controller 10, however, fuses just the componentry identified as vulnerable to a reverse polarity connection. In that regard, the motor 14 usually remains undamaged by a reverse polarity connection. It just rotates backwards at high speed. As for the control circuitry 15, it derives power from the battery 13, but it can be provided with diode protection against a reverse polarity connection.

(7) Speed control componentry 21 and braking componentry 22 are more vulnerable, however. Considering the speed control circuitry first, it generally includes a bank of several semiconductor devices 23 (e.g., MOSFET's) having substantial current carrying capability. That bank of semiconductor devices combines with the control circuitry 15 to serve as means for varying the resistance of a second unfused leg 24 of the circuit 12 connecting the negative input terminal 17 to the second output terminal 19. Varying the resistance of the second leg 24 varies the amount of power coupled from the battery 13 to the motor 14 and that affects motor speed.

(8) Of course, the resistance of the first leg 20 could be varied instead without departing from the inventive concepts disclosed. But in either case, if the polarity of the battery 13 is reversed, a reverse current flows through diodes 23a within the semiconductor devices and that threatens damage. It turns out, however, that the bank of semiconductor devices 23 has sufficient current carrying capability through the diodes 23a for the current drawn by the motor 14, and so a reverse polarity connection does not damage the speed control componentry 21. As a result, that componentry need not be fuse-protected.

Details | Text | Image | HTML | FULL

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EAST Browser - L15: (47) reverse adj... | US 4807277 A | Tag: S | Doc: 33/47 | Format : KWIC

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L15: (47) reverse adj... | US 4807277 | Tag: S | Doc: 33/47 | Format : KWIC

United States Patent [19]

Perry

[11] Patent Number: 4,807,277

[45] Date of Patent: Feb. 21, 1989

[54] REMOTELY ACTIVATED SWITCHING APPARATUS

[75] Inventor: Steven B. Perry, Highlands, N.J.

[73] Assignee: Legal, Inc., Tinton Falls, N.J.

[21] Appl. No.: 51,043

[22] Filed: May 15, 1987

[51] Int. Cl.[4] H04M 11/04

[52] U.S. Cl. 379/183; 379/6; 379/29

[58] Field of Search 379/6, 29, 102, 330

[56] References Cited

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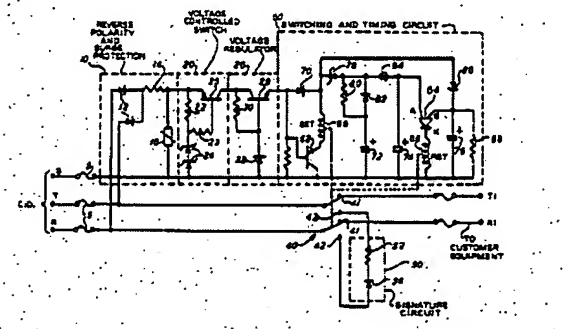
Primary Examiner—Gerald L. Brigance
Assistant Examiner—Richard A. Hjerpe
Attorney, Agent, or Firm—R. O. Rhodes, Jr.

[57] ABSTRACT

Apparatus for disconnecting and reconnecting equipment to a telephone line in response to a signal sent over the telephone line. The apparatus includes a voltage threshold circuit, a voltage regulator circuit and a switching and timing circuit. The switching and timing circuit includes a first energy storage capacitor and a first discharge circuit. The switching and timing circuit, further includes a second energy storage capacitor and a second discharge circuit and further includes a third energy storage capacitor and timing resistor. The first discharge circuit includes a first semiconductor switching device and a relay coil of a latching relay. The second discharge circuit includes a second semiconductor switching device and a second relay coil of the latching relay. When a signal is sent over the telephone line which exceeds the threshold level, it is regulated by the voltage regulator and charges up the first, second and third storage capacitors in an order such that the third capacitor charges first, the second capacitor next and the first capacitor last. Once the signal disappears from the telephone line, the first storage capacitor discharges into the first discharge circuit, thereby placing the switch into a first switching state and disconnecting the customer equipment. In this state, a test circuit, for example, may be connected to the telephone line to enable the central office to test the telephone line for faults. After a predetermined time delay determined by the discharge of the third energy storage capacitor into the timing resistor, the second discharge circuit is activated by a voltage differential between the second and third storage capacitors whereby the switch is switched from the first state back to the second state, thereby reconnecting the customer equipment, for example, a telephone, back to the telephone line.

20 Claims, 1 Drawing Sheet



L15: (47) reverse adj... | US 4807277 A | Tag: S | Doc: 33/47 | Format : KWIC

US-PAT-NO: 4807277
DOCUMENT-IDENTIFIER: US 4807277 A
TITLE: Remotely activated switching apparatus

Detailed Description Text - DETX (2):

With reference now to the drawing, the apparatus of the present invention includes a first group of terminals connected to the incoming telephone line, i.e., to the central office (C.O.) telephone line. These terminals include a Tip (T), Ring (R) and ground (G) line. The ground line may be an earth ground. The incoming central office lines may be connected by fuses 5 to a reverse polarity and surge protection circuit 10. The output of the reverse polarity and surge protection circuit 10 is coupled to a voltage controlled switch circuit 20, which functions to go into conduction only if the input voltage exceeds a predetermined threshold voltage. The output of the voltage controlled switch circuit 20 is coupled to a voltage regulator circuit 26, which functions to regulate the voltage from the voltage controlled switch circuit 20 to a predetermined output voltage. The output voltage from voltage regulator circuit 26 is then coupled to switching and timing circuit 60, which controls switch 40, for example, a relay. Relay 40 may comprise a double pole/double throw relay having one pair of stationary contacts 41 connected to the customer equipment (T1 and R1) and having the other pair of stationary contacts 42 connected to signature circuit 50.

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EAST Browser - L15: (47) reverse adj... | US 4510431 A | Tag: S | Doc: 35/47 | Format : KWIC

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L15: (47) reverse adj... | US 4510431 | Tag: S | Doc: 35/47 | Full

United States Patent [19]

Winkler

[11] Patent Number 4,510,431

[45] Date of Patent Apr. 9, 1985

[54] D.C. STEPPED-UP VOLTAGE TRANSFORMERLESS BATTERY CHARGER

[76] Inventor: Harry L. Winkler, P.O. Box 432, Pinehurst, Id. 83850

[21] Appl. No.: 353,110

[22] Filed: Feb. 25, 1982

Related U.S. Application Data

[63] Continuation of Ser. No. 143,926, Jun. 23, 1980, abandoned.

[51] Int. Cl.³ H02J 7/00

[52] U.S. Cl. 320/1; 320/39

[58] Field of Search 363/21; 320/1, 39

[56] References Cited

U.S. PATENT DOCUMENTS

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3,775,659 11/1973 Carlson 320/21
4,126,867 11/1978 Hayman 363/21
4,211,954 8/1980 Capel 320/22

FOREIGN PATENT DOCUMENTS

1116941 6/1968 United Kingdom 363/106

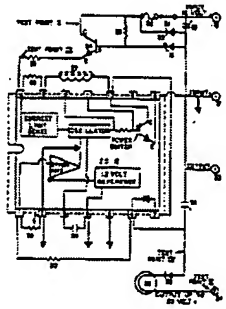
Primary Examiner—William H. Beha, Jr.
Assistant Examiner—Judson H. Jones

[57] ABSTRACT

A battery charger that takes energy from a battery and steps-up the voltage to charge another battery.

The direct current, going into the charger's circuit goes through the voltage regulator and then to a switching voltage regulator (the integrated circuit) and a few external components which constructs the energy to charge the output capacitor. The output capacitor voltage is controlled by a resistive voltage divider network, and energy stored in the output capacitor is transferred through a diode and a current limiter to charge the battery.

1 Claim, 1 Drawing Figure



L15: (47) reverse adj... | US 4510431 A | Tag: S | Doc: 35/47 | Format : KWIC

US-PAT-NO: 4510431

DOCUMENT-IDENTIFIER: US 4510431 A

TITLE: D.C. Stepped-up voltage transformerless battery charger

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Detailed Description Text - DETX (2):

This battery charger is mainly designed to charge 12 and 15 volt nickel-cadmium batteries for hand held transceivers. The battery charger operates from 12 volts direct current with negative ground. With positive power going into the charger circuit, it goes through the switch (21) and through the fuse (22). The fuse (22) is used to protect the circuit of the charger in case something goes wrong, also for protection from reverse polarity. A rectifier type diode (20) the anode is connected to the ground (17) and the diode (20) cathode is connected to the far side of the fuse (22). When the switch (21) is on and the diode (20) receives reverse polarity, it will short out the fuse (22) thus causing it to blow. This protects the regulator transistor (24) as well as the Integrated Circuit (15) . . . from here on, the Integrated Circuit (15) will be referred to as I.C. (15).

Claims Text - CLTX (4):

a circuit protector comprising a fuse and a first rectifier, means for connecting one end of said fuse to said power switch and means for connecting said rectifier to be poled to blow said fuse upon receiving reverse polarity of said voltage source;

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D-C motor system ved commutation	318/
ed-up voltage rless battery	320/
engine oil level e system	123/

EAST Browser - L15: (47) reverse adj... | US 3956683 A | Tag: S | Doc: 40/47 | Format : KWIC

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L15: (47) reverse adj... | US 3956683 | Tag: S | Doc: 40/47 | "Full"

United States Patent [19]

Popp

[11] 3,956,683

[45] May 11, 1976

[54] TAPER TYPE OF BATTERY CHARGER

[75] Inventor: Ralph Popp, Pittsburgh, Pa.

[73] Assignee: Westinghouse Air Brake Company, Swissvale, Pa.

[22] Filed: Mar. 6, 1974

[21] Appl. No.: 448,459

[52] U.S. Cl. 320/13; 320/39; 321/18

[51] Int. Cl.[2] H02J 7/10

[58] Field of Search 320/22-24, 320/39, 40, 51, 21; 321/18, 19

[56] References Cited

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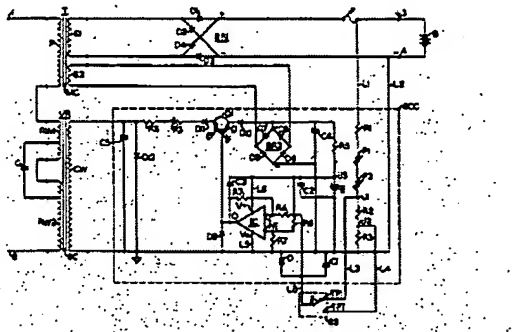
3,805,425	9/1963	Meyer	321/16
3,363,162	1/1968	Bowden	320/22 X
3,602,794	8/1971	Wanlass	320/39

Primary Examiner—J. D. Miller
Assistant Examiner—Robert J. Hickey
Attorney, Agent, or Firm—J. B. Sotak; R. W. McIntire, Jr.

[57] ABSTRACT

This disclosure relates to an automatic taper charging battery charger having a power transformer and a series connected variable reactor, a pair of rectifiers powered by the transformer, a pair of output terminals coupled to one of the rectifiers, a sensing and control circuit powered by the other rectifier and responsive to the voltage of a battery connected to the output terminals for controlling the impedance of the variable reactor and in turn regulating the voltage developed across the power transformer and thereby controlling the current charging rate supplied to the battery.

8 Claims, 1 Drawing Figure



L15: (47) reverse adj... | US 3956683 A | Tag: S | Doc: 40/47 | Format : KWIC

US-PAT-NO: 3956683

DOCUMENT-IDENTIFIER: US 3956683 A

TITLE: Taper type of battery charger

Detailed Description Text - DETX (11):

As mentioned above, reverse polarity protection positively ensures that the battery charger is not damaged by burn out or the like by the diodes of bridge rectifier BR1 and fuse F. If the battery B is inadvertently connected to the reverse manner from that shown in the drawings, the four diodes of the bridge rectifier BR1 immediately conduct and short circuit the battery B through the fuse element F. The short circuiting causes the fuse F to blow thereby immediately breaking the circuit so no resulting impairment will occur to the various current sensitive elements of the charger. In addition, the diode D protects the operational amplifier IC while the diode D10 protects the transistor Q1 against damage and destruction on inadvertent reverse connection of the battery.

Details | Text | Image | HTML | KWIC

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EAST Browser - L15: (47) reverse adj... | US 5488872 A | Tag: S | Doc: 23/47 | Format : KWIC

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L15: (47) reverse adj... | US 5488872 | Tag: S | Doc: 23/47 | Format : KWIC

US005488872A

United States Patent [19]

McCormick

[11] Patent Number: 5,488,872

[45] Date of Patent: Feb. 6, 1996

[54] SYSTEM AND METHOD FOR LOAD SENSING

[75] Inventor: Peter McCormick, Dallas, Tex.

[73] Assignee: EDA Systems, Inc., Dallas, Tex.

[21] Appl. No.: 79,971

[22] Filed: Jun. 17, 1993

[51] Int. Cl.[6] G01L 1/00

[52] U.S. Cl. 73/862.68; 73/862.06

[58] Field of Search 73/DIG. 4, 862.06, 73/862.041, 862.043, 862.68

[56] References Cited

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5,015,775 4/1991 Lucas et al. 73/862.68

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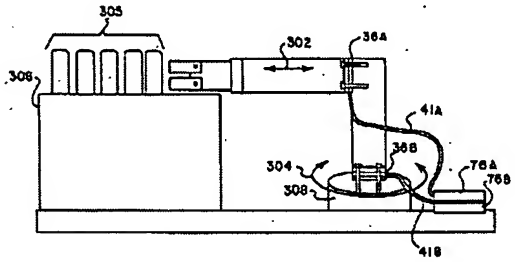
5,265,482 6/1993 Sandmeyer et al. 73/862.625

Primary Examiner—Richard E. Chilcot, Jr.
Assistant Examiner—R. Biegel
Attorney, Agent, or Firm—Daniel V. Thompson

[57] ABSTRACT

An intelligent load sensing system employs a piezoelectric sensor and digital processor for providing accurate sensing of loads, collisions, and vibrations.

7 Claims, 10 Drawing Sheets



US-PAT-NO: 5488872
DOCUMENT-IDENTIFIER: US 5488872 A
TITLE: System and method for load sensing

Detailed Description Text - DETX (6):

A power supply 43 supplies the applied voltage (V) on terminals 42, through protective fuse 44, and through the reverse polarity protection diode 46. The cathode of the protection diode 46 provides the applied voltage V to the power conditioning circuit 30 which includes a zener diode (not shown) and a regulator (not shown) for regulating and dropping the voltage to logic compatible levels. Many expedients are known for the power conditioning circuit 30, the exact configuration not being necessary for the understanding of the present invention.

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22	☐	☐	US 5563821 A	19961008	22	Semiconductor memory device having a program circuit for	365/
23	☐	☐	US 5488872 A	19960206	17	System and method for load sensing	73/8
24	☑	☐	US 5468680 A	19951121	18	Method of making a three-terminal fuse	438/

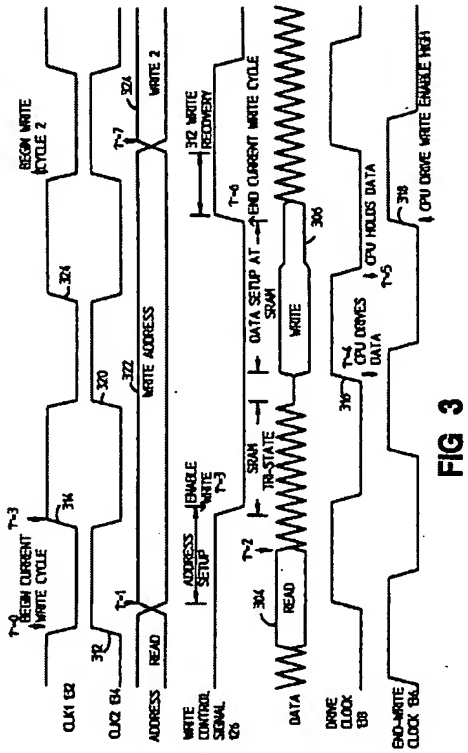

FIG 3

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US-PAT-NO: 5426771
DOCUMENT-IDENTIFIER: US 5426771 A
See image for Certificate of Correction
TITLE: System and method for performing high-sped cache memory writes

Detailed Description Text - DETX (68):

When new data is driven by CPU 110, the drive FETs switch the output signals. The hold circuit then maintains this signal on the bus during the data hold period. The hold circuit essentially follows the output. The higher current drive FETs can easily overdrive the hold circuit, thus switching the output. The hold circuit then holds the new value. An advantage of holding data on data bus 124 using keeper FETs is that chip enable and output enable signals are not required. This is because the high current FETs that originally drive data on to data bus 124 in step 214 are turned off and only the keeper FETs hold the data. New data can be driven on to data bus 124 by either CPU 110 or by SRAM 120 without turning off the hold circuit FETs. Since the drive FETs have already been turned off, situations where SRAM 120 drivers are fighting CPU 110 drivers will never arise.

Details | Text | Image | HTML | KWIC

EAST Browser - L9: (2) reverse with... | US 6384875 B2 | Tag: S,P,T1 | Doc: 2/2 | Format : KWIC

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L9: (2) reverse with... | US 6384875 Tag: S,P,T1 | Doc: 2/2 | "Full

US006384875B2

(12) **United States Patent**
Bertagna

(10) Patent No.: **US 6,384,875 B2**
(45) Date of Patent: **May 7, 2002**

(54) VIDEO DISPLAY POSITIONING SYSTEM

(75) Inventor: Richard A. Bertagna, [illegible], CA (US)

(73) Assignee: [illegible] Corp., [illegible], CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: [illegible]

(22) Filed: Jun. 1, 2001

Related U.S. Application Data

(63) Continuation of application No. PCT/[illegible], filed on Dec. 6, [illegible].

(60) Provisional application No. [illegible], filed on Dec. 4, [illegible].

(51) Int. Cl.[7] .... [illegible]

(52) U.S. Cl. .... [illegible]

(58) Field of Search .... [illegible]

(56) References Cited

U.S. PATENT DOCUMENTS

[illegible]

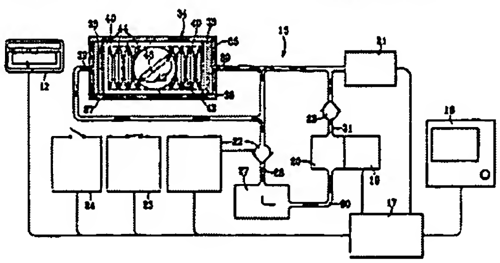
* cited by examiner

Primary Examiner—[illegible]
Assistant Examiner—[illegible]
(74) *Attorney, Agent, or Firm*—[illegible], LLP

(57) ABSTRACT

The present invention relates a video monitor display positioning system of the type in widespread use in passenger aircraft entertainment systems and includes a housing in which a video screen is rotatably positioned for rotation between a retracted position and an extended position, but with rotary motion provided through a hydraulic system that includes a mechanical linkage from the screen to a linear motion to rotational motion actuator subassembly which is in turn actuated by a hydraulic system that includes a cylinder, two mutually opposed, hollowed pistons, an internal spring positioned within the cavity formed by the hollow pistons, a hydraulic circuit including a hydraulic oil reservoir, an electric motor that controls a hydraulic pump, a solenoid valve and an over pressure switch.

14 Claims, 11 Drawing Sheets



L9: (2) reverse with... | US 6384875 B2 | Tag: S,P,T1 | Doc: 2/2 | Format

US-PAT-NO: 6384875

DOCUMENT-IDENTIFIER: US 6384875 B2

TITLE: Video display positioning system

Detailed Description Text - DETX (29):

Also, it is preferred that the control system be configured so that a retract command must be given to reset the over-pressure latch before an extend command will be recognized in the case that the over pressure switch opens and the screen retracts. In the present embodiment it is envisioned that reverse polarity protection is provided through conventional circuitry but that no fuse protection incorporated. Specific board layout, connecting wire descriptions, junction box locations and configurations are within the skill of the art in this field and are chose so that the system will work for its intended purpose of positioning the screen hydraulically within the principle of the invention and in the specific application chosen.

Details Text Image HTML KWIC

L10: (3) reverse with... | US 20050049107 | Tag: S | Doc: 1/3 | "Full" 1/12

US 20050049107A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2005/0049107 A1

Willmot et al. (43) Pub. Date: Mar. 3, 2005

(54) TRANSMISSION SYSTEM

(76) Inventors: Eric P Willmot, Mount Eliza (AU); Lance Pidgeon, Queenscliffe (AU)

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(21) Appl. No.: 10/498,583

(22) PCT Filed: Dec. 10, 2001

(86) PCT No.: PCT/AU01/01589

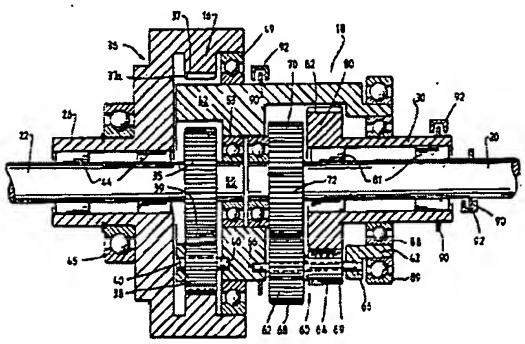
Publication Classification

(51) Int. Cl.[7] F16H 37/06

(52) U.S. Cl. 475/339

(57) ABSTRACT

Transmission systems are disclosed which include a dual sunwheel system having an output sunwheel (70) and a control sunwheel (80). A planet cage (18) is arranged around the dual sunwheel system and includes a planet gear (62) in mesh with the sunwheel (70) and a planet gear (64) in mesh with the sunwheel (80). The planet gears (62, 64) are coupled to one another. The drive ratio of the transmission is controlled by controlling the cage (18) or the control sunwheel (70). The speed of rotation of the input (22), output (20) and control sunwheel (70) are sensed by sensors (90) and control signals are generated to control a control device to thereby control the rotation of planet cage (18) or the control sunwheel (80) to thereby set the drive ratio of the transmission. The control devices can include a motor, one or more magnetic powder clutches, a variable controlled system and a mechanical pitch transfer gear system.



L10: (3) reverse with... | US 20050049107 A1 | Tag: S | Doc: 1/3 | Format

DOCUMENT-IDENTIFIER: US 20050049107 A1
TITLE: Transmission system

Detail Description Paragraph - DETX (141):

[0295] With reference to FIG. 24, the controller has a pair of field effect transistors 700 and 701 which are connected in parallel with one another. Power is supplied to the field effect transistors from a battery 703. A diode 704 is provided to protect the circuitry should a battery of a higher voltage than required be used or the battery connected in reverse polarity. A fuse 705 is connected between the diode 704 and the battery so that should the voltage supplied by the battery be too high or the battery connected in reverse polarity, the fuse 705 will burn out to thereby shut off power supplied to the circuitry shown in FIG. 24.

L13: (23) reverse with... | US 5636863 | Tag: S | Doc: 13/23

US005636863A

United States Patent [19]

Reid et al.

[11] Patent Number: 5,636,863

[45] Date of Patent: Jun. 10, 1997

[54] VEHICLE STEERING COLUMN CONTROL SYSTEM

[75] Inventors: Scott A. Reid, Brookfield Prof G. Rapa, Germantown; James E. Hansen, Oak Creek; Ruth E. Hubbell, Milwaukee; Erich Rahm, West Bend, all of Wis.

[73] Assignee: Eaton Corporation, Cleveland, Ohio

[21] Appl. No.: 333,433

[22] Filed: Apr. 26, 1994

[51] Int. Cl.[6] B62D 21/03

[52] U.S. Cl. 280/734; 340/436

[58] Field of Search 280/734, 735, 280/731; 307/10.1; 439/15, 164; 340/431, 429, 436

[56] References Cited

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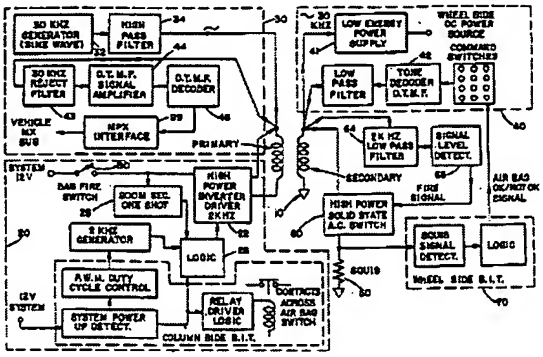
482254 A1 6/1992 European Pat. Off. 307/10.1
543543 A1 5/1993 European Pat. Off. 307/10.1
3530972 6/1986 Germany 307/10.1

Primary Examiner—Eric D. Culbreth

[57] ABSTRACT

A control circuit is provided for transferring power and communication signals through a window coupling device in a vehicle steering column. The device can comprise a rotary transformer having a primary and secondary magnetic structure respectively associated with the wheel side and column side of the steering column. A squib power circuit transforms a high energy power signal suitable for firing an air bag from the column side to the wheel side. A low energy power circuit generates a signal from the column side to the wheel side suitable for operating isolated wheel side electronics, such as cruise control and the like. A tone encoder and decoder circuit communicates low level control signals suitable for signalling wheel side commands from the wheel side to the column side. The low energy power circuit and the tone encoder circuit operate simultaneously and continuously without signal debilitating interaction.

23 Claims, 6 Drawing Sheets



L13: (23) reverse with... | US 5636863 A | Tag: S | Doc: 13/23 | Format: KWIC

US-PAT-NO: 5636863
DOCUMENT-IDENTIFIER: US 5636863 A
TITLE: Vehicle steering column control system

Detailed Description Text - DETX (9):

The H-drive alternately switches the primary with forward and reverse polarity square wave signals equal to the system DC power applied to it. With a conventional 12 volt vehicle system, this is the equivalent of applying a plus and minus 12 volt square wave (24 volts peak-to-peak) onto the transformer 10, yet only using a single ended 12 volt supply. Accordingly, primary currents will exceed 20 amperes and secondary voltages and resultant currents into the squib are sufficient to fire an air bag.

Detailed Description Text - DETX (10):

In the embodiment shown in FIG. 2C, the square wave signal is initially generated by a 2 khz generator circuit 24 (TL 494 integrated circuit), especially designed for inverter and PWM power supply applications. Two alternating square wave signal outputs are generated (pins 9 and 10) to be used to drive the H-drive circuit 22. The H-drive output is comprised of four high current FET power transistors 91, 92, 93, 94, two P-channel types and two N-channel types. For operation, for instance, transistors 91 and 94 are to be turned on to conduct current through the transformer primary in one direction. In effect, one side of the winding is connected to plus 12 volts and the other side to ground. On the next half-cycle, this is reversed by turning off transistors 91, 94 and instead turning on transistors 92, 93, and in effect reversing the polarity on the transformer. The generator circuit 24 is operated in a mode that allows a brief "OFF" period between polarity reversals to assure that two FETs on one side of the bridge are not simultaneously turned on, which could cause a short across the main supply to ground (i.e., transistors 91 and 93 are never on simultaneously, or transistors 92, 94 either). Logic circuitry 26 between the generator 24 and the H-drive 22 is used to switch the H-drive 22 from an inoperational state (normal system operation) to a fire condition. In other words, during normal operation of the steering control system, the H-drive 22 should not be operating in the high power inverter mode. Rather, a transistor 94 is the only FET biased on, and this is done to ground at one end of the transformer primary, which is necessary for normal operation. The other three FETS 91, 92, 93 are held in an OFF state

Details | Text | Image | HTML | KWIC

					circuit for an exciter field	
21		US 3929436 A	19751230	11	Rotary electrostatic precipitator	96/5
22		US 3851232 A	19741126	18	ELECTRIC VEHICLE PROPULSION SYSTEM	318/
23		US 3786264 A	19740115	10	HIGH SPEED LIGHT DETECTOR AMPLIFIER	250/

L13: (23) reverse with... | US 6130487 | Tag: S | Doc: 9/23

US006130487A

United States Patent [19]

Bertsilan et al.

[11] Patent Number: 6,130,487

[45] Date of Patent: Oct. 10, 2000

[54] ELECTRONIC INTERFACE AND METHOD FOR CONNECTING THE ELECTRICAL SYSTEMS OF A TRUCK AND TRAILER

[75] Inventors: Richard P. Bertsilan, Arlington; Lee E. Plemmons, LaConner; Jon M. Quigley, Mount Vernon; Jeffrey E. Bergewell, Burlington, all of Wash.

[73] Assignee: PACCAR Inc, Bellevue, Wash.

[21] Appl. No.: 09/253,314

[22] Filed: Feb. 19, 1999

[51] Int. Cl.[7] B60D 1/62

[52] U.S. Cl. 307/9.1; 340/310.01; 340/431; 340/333; 340/825.06

[58] Field of Search 307/10.1, 9.1; 340/825.06, 538, 431, 310.01; 280/423.1, 456; 180/14.2

[56] References Cited

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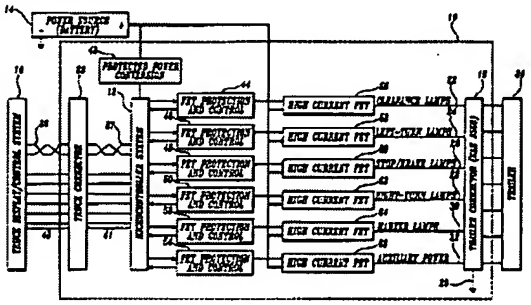
5,920,128	7/1999	Ekon	307/10.1

Primary Examiner—Albert W. Paladini
Attorney, Agent, or Firm—Christensen O'Connor Johnson & Kindness PLLC

[57] ABSTRACT

An electrical interface for connecting a truck electrical system to a trailer electrical system. The electrical interface includes a solid-state switching device that selectively connecting a power source in the truck electrical system to a circuit in the trailer electrical system. If a fault is detected in the provision of power to the circuit in the trailer electrical system, the solid-state switching device reduces the flow of power or disconnects the power source from the circuit in the trailer electrical system. A microcontroller system connected to the truck electrical system transmits control signals to the solid-state switching device to control the flow of power from the power source to the circuit in the trailer electrical system in accordance with instruction signals received from the truck electrical system. The solid-state switching device includes a transistor switch connected between the power source and the circuit in the trailer electrical system and a transistor driver circuit connected to the microcontroller system to control the operation of the transistor switch. The microcontroller system includes a processor and a transceiver that conveys data transmitted between the processor and the truck electrical system. The electrical interface may also include a daughter board connector for connecting an external circuit, such as a communications circuit, to the electrical interface that enables the processor to communicate data with the circuit in the trailer electrical system using an existing electrical connection to an output of the electrical interface.

24 Claims, 10 Drawing Sheets



a 7-pin SAE J560 connector. One pin of the J560 connector is connected to ground via line 20. The other six pins of the J560 connector are connected to high-current field-effect transistors (FETs) 56, 58, 60, 62, 64, and 66 via lines 22, 24, 26, 28, 30, and 32 to provide an electrical connection to the following respective circuits in the trailer 34: clearance lamps, left-turn signal lamps, stop/brake lamps, right-turn signal lamps, marker lamps, and auxiliary power circuit.

Detailed Description Text - DETX (8):

The power conversion circuit 42 includes a diode D1 to protect the circuit from reverse polarity of the inputs of the power source 14. The power conversion circuit 42 also includes an inductor L1 and capacitors C1 and C2 to filter higher frequency noise on the voltage input from the power source 14.

Detailed Description Text - DETX (12):

The microcontroller system 12, an embodiment of which is described in more detail below in reference to FIGS. 3A and 3B, receives instruction signals from the truck display/control system 18 by way of the data link 37 and/or individual signal lines 41 as shown in FIG. 1. FIG. 3A is a schematic drawing of a first portion of the microcontroller system 12 showing the microcontroller aspect of the microcontroller system 12. FIG. 3B is a schematic drawing of a second portion of the microcontroller system 12 showing the data communication aspect of the microcontroller system 12. According to instruction signals received from the truck display/control system 18, the microcontroller system 12 sends control signals to one or more FET protection and control circuits 44, 46, 48, 50, 52, and 54 to permit or interrupt the flow of current from the power source 14 through high-current FETs 56, 58, 60, 62, 64, and 66 to the trailer connector 16. The FET protection and control circuits 44, 46, 48, 50, 52, and 54, and the corresponding high-current FETs 56, 58, 60, 62, 64, and 66, are described in more detail below in reference to FIGS. 4-9.

Detailed Description Text - DETX (14):

Control lines labeled Control1-Control6 convey control signals from output pins on the processor U3 to the FET protection and control circuits 44, 46, 48, 50, 52, and 54 to indicate when to turn on and off the corresponding high-current FETs 56, 58, 60, 62, 64, and 66. As will be better understood from the discussion below regarding the FET protection and control circuits 44, 46, 48, 50, 52, and 54, faults detected in providing power to the trailer 34 are reported to the processor U3 through lines Fault1-Fault6. The processor U3 may then forward information

17	☐	☐	US 4791349 A	19881213	17	Electric power system	323/
18	☐	☐	US 4758937 A	19880719	21	DC-DC converter	363/
19	☐	☐	US 4616166 A	19861007	25	Electric power system for starting a large rotatable	318/.

EAST Browser - L15: (47) reverse adj... | US 20040009075 A1 | Tag: S | Doc: 4/47 | Format : KWIC

File Edit View Tools Window Help

L15: (47) reverse adj... | US 20040009075 | Tag: S | Doc: 4/47

US 20040009075A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2004/0009075 A1

Meza et al. (43) Pub. Date: Jan. 15, 2004

(54) PUMP AND PUMP CONTROL CIRCUIT APPARATUS AND METHOD

(76) Inventors: Humberto V. Meza, Tracy, CA (US); Nikhil Jitendra Gandhi, Anaheim, CA (US); Quang Minh Truong, West Covina, CA (US)

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(21) Appl. No.: 10/453,874

(22) Filed: Jun. 3, 2003

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/994,378, filed on Nov. 26, 2001, now Pat. No. 6,623,245.

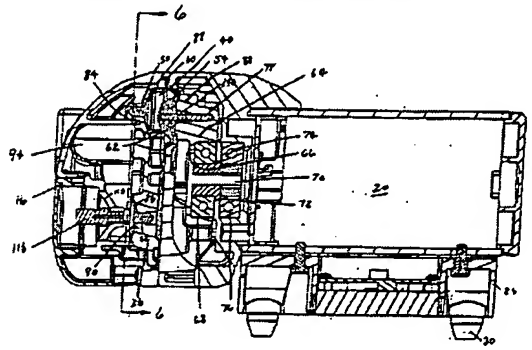
Publication Classification

(51) Int. Cl.[7] F04B 49/10

(52) U.S. Cl. 417/32; 417/44.11

(57) ABSTRACT

A method and apparatus for a pump and a pump control system. The apparatus includes pistons integrally formed to a diaphragm and coupled to the diaphragm by convolutes. The convolutes have a bottom surface angled with respect to a top surface of the pistons. The apparatus also includes an outlet port positioned tangentially with respect to the perimeter of an outlet chamber. The apparatus further includes a non-mechanical pressure sensor and a temperature sensor coupled to a pump control system. For the method of the invention, the microcontroller provides a pulse-width modulation control signal to an output power stage in order to selectively control the power provided to the pump. The control signal is based on the pressure within the pump, the current being provided to the pump, the voltage level of the battery, and the temperature of the pump.



L15: (47) reverse adj... | US 20040009075 A1 | Tag: S | Doc: 4/47 | Format

DOCUMENT-IDENTIFIER: US 20040009075 A1

TITLE: Pump and pump control circuit apparatus and method

Detail Description Paragraph - DETX (68):

[0125] As shown in FIG. 24, a first power temperature control (PTC) device 519 and a second PTC device 521 can be connected in series with the connection 518 to act as fuses in order to protect against a reverse in polarity. In some embodiments, a first battery cable (e.g., represented by the connection 518) can be connected to a positive input of the input power stage 504 and a second battery cable (e.g., represented by the connection 520) can be connected to a negative input of the input power stage 504. The first battery cable can be designed to connect to the positive terminal of the battery and the second cable can be designed to connect to the negative terminal of the battery. However, the PTC devices 519 and 521 can protect against reverse polarity. If the first battery cable is initially connected to the negative terminal of the battery and the second battery cable is initially connected to the positive terminal of the battery, the electronics of the pump control system 500 will not be harmed. When the first and second cables are switched to the proper battery terminals, the pump 10 will operate normally.

Details | Text | Image | HTML | KWIC

	P		A1				
9	P		US 20010043455 A1	20011122	18	Video display positioning system	361/
10	P		US 20010017755 A1	20010830	12	Semiconductor integrated circuit provided with input	361/
11	P		US 6870196 B2	20050322	11	Series/parallel OLED light source	257/

EAST Browser - L15: (47) reverse adj... | US 20020109952 | Tag: S | Doc: 7/47 | "Full" 1/5 (Total images 5) | Front Page

File Edit View Tools Window Help

L15: (47) reverse adj... | US 20020109952 | Tag: S | Doc: 7/47 | "Full" 1/5

US 20020109952A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2002/0109951 A1

Rapsinski et al. (43) Pub. Date: Aug. 15, 2002

(54) HIGH VOLTAGE BATTERY CUTOUT CIRCUIT FOR A MOTOR VEHICLE ELECTRICAL SYSTEM

(52) U.S. Cl. 361/88; 361/91.1

(76) Inventors: Robert E. Rapsinski, Kokomo, IN (US); Alexander C. Lawton, Kokomo, IN (US); Deceased Aug, Kokomo, IN (US)

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(21) Appl. No.: 09/780,711

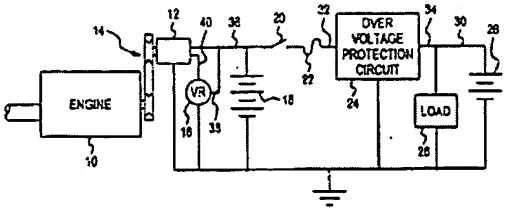
(22) Filed: Feb. 12, 2001

Publication Classification

(51) Int. Cl.[7] H02H 3/18

(57) ABSTRACT

An improved over-voltage protection circuit for a motor vehicle electrical system includes an over-voltage responsive circuit for momentarily disconnecting the vehicle start-up battery and alternator from vehicle electrical loads, and an auxiliary storage battery for supplying a safe operating voltage to the electrical loads during the momentary disconnection. The over-voltage responsive circuit includes a MOSFET device that couples the vehicle storage battery and alternator to the electrical loads and auxiliary storage battery, and a voltage responsive circuit that turns the MOSFET device off to decouple the electrical loads and auxiliary storage battery from the vehicle storage battery and alternator so long as an over-voltage condition is detected.



L15: (47) reverse adj... | US 20020109952 A1 | Tag: S | Doc: 7/47 | P...

DOCUMENT-IDENTIFIER: US 20020109952 A1

TITLE: High voltage battery cutout circuit for a motor vehicle electrical system

Detail Description Paragraph - DETX (4):

[0008] The over-voltage protection circuit 24, shown in detail in FIG. 2, operates in the event of a specified over-voltage on line 32 to effectively decouple lines 32 and 34, isolating the load 26 and auxiliary storage battery 28 from the alternator 12 and main storage battery 18. In such event, the auxiliary battery 28 provides power to load 26 via line 30, and the load 26 is protected from over-voltage damage, and loss of function due to automatic shut-down is prevented. Referring to FIG. 2, the over-voltage protection circuit 24 includes a P-channel MOSFET 50 coupling line 32 to line 34 through its source-to-drain circuit, a pull-down resistor 52 connected between the MOSFET gate terminal 54 and ground for normally biasing the MOSFET 50 to a conductive state, and a voltage responsive circuit 56 for biasing MOSFET 50 to a non-conductive state when the voltage with respect to ground on line 32 exceeds a predefined threshold. The voltage responsive circuit 56 includes a zener diode 58 and resistor 60 coupled in series between line 32 and ground potential, a NPN transistor 62 having its base coupled to a junction 64 between zener diode 58 and resistor 60, and a PNP transistor 66 having its emitter-collector circuit coupled across the gate-to-source circuit of MOSFET 50. The zener diode 58 is ordinarily reverse biased, and the resistor 60 maintains the transistors 62 and 66 in non-conductive states. However, when the voltage on line 32 exceeds the breakdown voltage of zener diode 58 (which may be 18 volts, for example), a current path is established through the resistor 60, and the resulting voltage at junction 64 biases transistor 62 to a conductive state. This establishes a current path through the emitter-base circuit of transistor 66, the collector-emitter circuit of transistor 62 and resistor 68, biasing transistor 66 conductive to place a low impedance path between the gate and source terminals of MOSFET 50 to bias MOSFET 50 to a non-conductive state. Finally, the over-voltage protection circuit 24 also includes a second zener diode 70 connected between line 32 and ground potential for limiting the peak voltage applied to the aforementioned circuit elements, and for establishing a low impedance path through fuse 22 and battery 18 in the event that a reverse polarity is applied to battery 18 during jump starting; for example, zener diode 70 may have a breakdown voltage of approximately 35-volts.

Details | Text | Image | HTML | KWIC

		A1				
9		US 20010043455 A1	20011122	18	Video display positioning system	361/
10		US 20010017755 A1	20010830	12	Semiconductor integrated circuit provided with input	361/
11		US 6870196 B2	20050322	11	Series/parallel OLED light source	257/

EAST Browser - L15: (47) reverse adj... | US 20010045355 A1 | Tag: S | Doc: 8/47 | Format : KWIC

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L15: (47) reverse adj... | US 20010045355 | Tag: S | Doc: 8/47

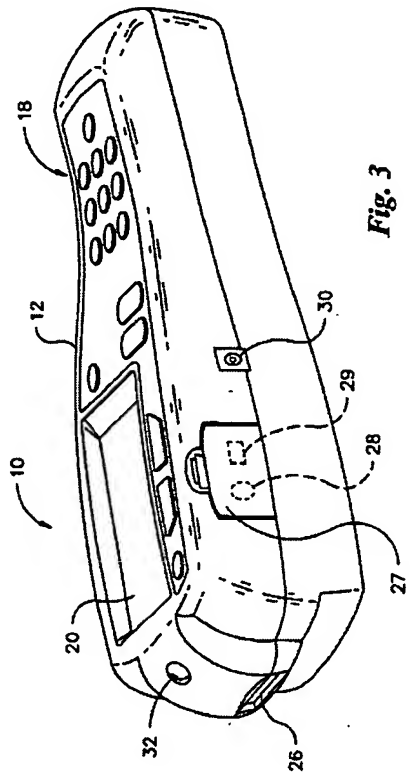


Fig. 3

L15: (47) reverse adj... | US 20010045355 A1 | Tag: S | Doc: 8/47 | Format

DOCUMENT-IDENTIFIER: US 20010045355 A1
TITLE: Medical diagnostic system

Detail Description Paragraph - DETX (21):

[0045] The main source of power for the instrument 10 is a battery pack 524. In the present embodiment, the battery pack 524 is comprised of six (6) series connected nickel-metal hydrid (NiMH) batteries to provide a nominal 7.2 volt output source. The use of nickel-metal hydrid technology allows for high energy density and quick recharge times. However, other types of batteries such as nickel-cadmium (NiCD) and lithium-Ion (LiIon) and others known to those skilled in the art could be used. The instrument 10 also includes an intelligent fast charge controller 526 which functions to recharge the battery pack 524, typically in two hours or less and continuously monitors battery temperature using a sensor (not shown) embedded within the battery pack. In the present embodiment, the intelligent battery charger comprises a Maxim MAX 712 integrated circuit. Other intelligent battery charger circuits may be used if desired. If the battery pack temperature is to high or too low, the intelligent charger 526 stops the fast charging operation until a safe battery pack temperature level is reached. A self resetting fuse (not shown) is also embedded within the battery pack 524 to provide enhanced safety. The battery charger 526 is activated whenever an accompanying AC adapter wall pack (not shown) is connected to the instrument 10 through the battery charger connection 30 (FIG. 3) to provide power to the instrument 10 and to permit normal use of the device 10 during recharging of the battery pack 524. A second fuse (not shown) is also provided at the input connection for the wall pack and both the battery pack 524 and the wall pack connections have reverse polarity protection.

Details | Text | Image | HTML | KWIC

			A1			
9	☑	☐	US 20010043455 A1	20011122	18	Video display positioning system	361/
10	☑	☐	US 20010017755 A1	20010830	12	Semiconductor integrated circuit provided with input	361/
11	☑	☐	US 6870196 B2	20050322	11	Series/parallel OLED light source	257/

EAST Browser - L15: (47) reverse adj... | US 6833683 B2 | Tag: S | Doc: 12/47 | Format : KWIC

File Edit View Tools Window Help

L15: (47) reverse adj... | US 6833683 B2 | Tag: S | Doc: 12/47 | "Full" 1/8 no.

US006833683B2

(12) **United States Patent**
Winkler

(10) Patent No.: US 6,833,683 B2
(45) Date of Patent: Dec. 21, 2004

(54) UNIVERSAL BATTERY CHARGER APPARATUS

(76) Inventor: Harry L. Winkler, P.O. Box 632, Pinetorst, ID (US) 83850

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 57 days.

(21) Appl. No.: 10/407,732

(22) Filed: Apr. 7, 2003

(65) Prior Publication Data

US 2004/0195998 A1 Oct. 7, 2004

(51) Int. Cl.[7] H02J 7/00

(52) U.S. Cl. 320/109; 320/107

(58) Field of Search 320/109, 107, 320/110, 113, 122, 123

(56) References Cited

U.S. PATENT DOCUMENTS

4,638,421 B1 * 1/2003 White 307/39

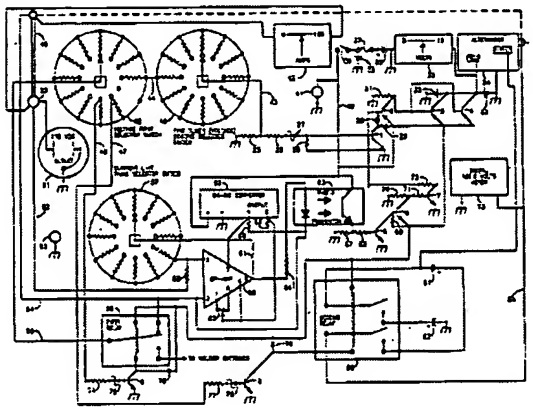
* cited by examiner

Primary Examiner—Lawrence Luk

(57) ABSTRACT

A Universal Battery Charger Apparatus designed to be used with a small gas engine equipped with a small alternator, capable of maintaining the charge level of a small 12 volt battery. Said battery supplies power for the circuit of said battery charger. Said engine drives a second alternator. Said battery charger has a wide range of controlled output voltages as well as 12 different current limiting capabilities making possible use of not only a battery charger for charging different voltages of external batteries, but also a DC arc welder and/or a 115 vch DC, power supply, all within its own framework, thus making said apparatus portable.

11 Claims, 2 Drawing Sheets



L15: (47) reverse adj... | US 6833683 B2 | Tag: S | Doc: 12/47 | Format : K...

US-PAT-NO: 6833683
DOCUMENT-IDENTIFIER: US 6833683 B2
TITLE: Universal battery charger apparatus

Detailed Description Text - DETX (2):

An explanation of the universal battery charger's circuit is based with a 12 volt battery #36 installed, with the 12 volt+power switch #39 turned ON. A diode #38 is wired across one end of a fuse #37 and to the ground. Said diode is poled to blow said fuse in the event of reverse polarity. As seen in FIG. 2, transistors #2,3,4 and 6 are PNP type, with their emitters connected to the 12 volt+lead #40. Transistors #1,5,7,8 and 9 are NPN type, with their emitters connected to ground. As seen in FIG. 2, the collectors of both power transistors are connected to the field terminal of the alternator #34. Said output power transistors #3 and #4 are a matched pair and are wired to produce full output voltage to said field of said alternator #34 until said transistors receive a different command from either the voltage sensor or the current limiter. A resistor #31 with one end connected to ground, the other end connected to the bases of said power transistors #3 and #4, thus making a negative bias for said power transistors. Two diodes #32 and #33 with anode ends connected to ground and cathodes connected to the collector's of said power transistors #3 and #4. Said diodes are used to protect said power transistors from inductive spikes caused by the field windings of said alternator #34.

Details | Text | Image | HTML | KWIC

			A1			circuit provided with input	
11			US 6870196 B2	20050322	11	Series/parallel OLED light source	257/
12			US 6833683 B2	20041221	8	Universal battery charger apparatus	320/
13			US 6606227 B2	20030812	5	High voltage battery cutout circuit for a motor vehicle	361/

EAST Browser - L15: (47) reverse adj... | US 6256185 B1 | Tag: S | Doc: 15/47 | Format : KWIC

File Edit View Tools Window Help

L15: (47) reverse adj... | US 6256185 | Tag: S | Doc: 15/47 | Full

US006256185B1

(12) **United States Patent**
Maller

(10) Patent No.: US 6,256,185 B1
(45) Date of Patent: Jul. 3, 2001

(54) LOW VOLTAGE DIRECT CONTROL UNIVERSAL PULSE WIDTH MODULATION MODULE

(75) Inventor: Dennis A. Maller, Racine, WI (US)

(73) Assignee: Tramontina, LLC, Menomonee Falls, WI (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/344,194

(22) Filed: Jun. 30, 1999

(51) Int. Cl.[7] H01H 47/00

(52) U.S. Cl. 361/152; 361/154; 361/91.5; 361/187; 361/194; 361/155; 361/196; 361/210

(58) Field of Search 361/154, 152, 156–157, 361/170, 168.1, 169.1, 187, 154–155, 196–197, 91.5, 210, 152

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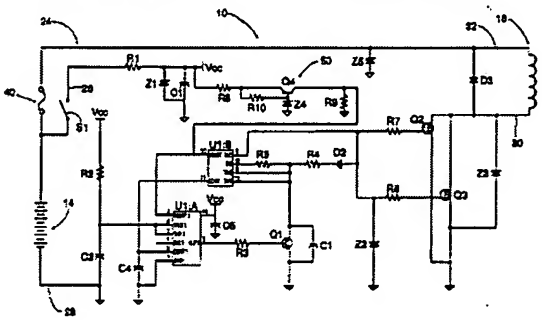
Primary Examiner—Michael Sherry
(74) *Attorney, Agent, or Firm*—Ryan Kromholz & Manion, S.C.

(57) ABSTRACT

An electrical control module and circuit for controlling a solenoid. The control circuit provides a constant voltage to a solenoid for a predetermined time period after which a pulse width modulated voltage is supplied. The circuit further includes components for reverse polarity protection, transient voltage protection, low gate drive voltage protection, reduced heat dissipation and improved magnetic drive under low input voltage conditions during application of the pulse width modulated voltage. The module may be used in conjunction with a single coil or a dual coil solenoid. The circuit may be utilized on a 12 volt or a 24 volt electrical system without adjustment.

24 Claims, 4 Drawing Sheets



L15: (47) reverse adj... | US 6256185 B1 | Tag: S | Doc: 15/47 | Format : KWIC

US-PAT-NO: 6256185
DOCUMENT-IDENTIFIER: US 6256185 B1
See image for Certificate of Correction
TITLE: Low voltage direct control universal pulse width modulation module

Brief Summary Text - BSTX (16):

The circuit preferably includes reverse polarity protection means associated with said first and second voltage control means for opening said circuit in the event that the polarity of said circuit is reversed. A fuse may also be provided, the fuse being sized to open when a reverse polarity condition is detected. In addition, low voltage protection means may be provided for disabling the first and second voltage control means when an inadequate input voltage is supplied to said circuit. The input voltage is preferably in the range of 8 volts to 30 volts.

Claims Text - CLTX (14):

8. The circuit of claim 1 further including reverse polarity protection means associated with said first and second voltage control means for opening an external protective fuse wired in series with said circuit in the event that input polarity to said circuit is reversed.

Claims Text - CLTX (36):

21. The circuit of claim 14 further including reverse polarity protection means associated with said voltage supply source for opening a supply fuse in the event that said circuit is reversely connected to said voltage supply source.

Details | Text | Image | HTML | KWIC

					circuit for a motor vehicle	
14		US 6384875 B2	20020507	18	Video display positioning system	348/
15		US 6256185 B1	20010703	13	Low voltage direct control universal pulse width	361/
16		US 6034511 A	20000307	31	Light weight rotor and stator with multiple coil	322/

EAST Browser - L18: (4) reverse adj... | US 5806621 A | Tag: S | Doc: 3/4 | Format : KWIC

File Edit View Tools Window Help

L18: (4) reverse adj... | US 5806621 | Tag: S | Doc: 3/4 | Full | 1/25 Scroll

US005806621A

United States Patent [19]

Sods et al.

[11] Patent Number: 5,806,621

[45] Date of Patent: Sep. 15, 1998

[54] ELECTRIC POWER ASSISTED BICYCLE

[75] Inventors: Hajime Sods; Masakiro Kuroki, both of Saitama, Japan

[73] Assignee: Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

[21] Appl. No.: 474,834

[22] Filed: Jun. 7, 1995

[30] Foreign Application Priority Data

Aug. 18, 1994 [JP] Japan 6-194447

[51] Int. Cl.[6] B62M 23/02

[52] U.S. Cl. 180/206; 180/207; 180/220; 180/65.8; 180/65.5

[58] Field of Search 180/220, 205, 180/206, 207, 65.1, 65.3, 65.5, 65.8, 324/429, 433

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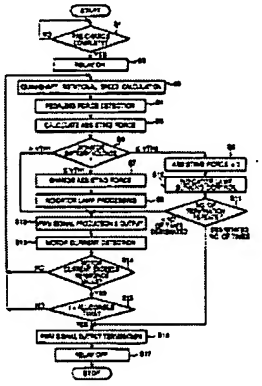
Primary Examiner—Anne Marie Boehler

Attorney, Agent, or Firm—Birch, Stewart, Kolasch & Birch, LLP

[57] ABSTRACT

A secondary battery generates an assisting force for a bicycle. When the voltage of the battery drops, a driver can physically feel a variation in driving feeling to indicate a reduction in battery capacity and to thus indicate the amount of capacity remaining. The variation in driving feeling is an increase in force required to pedal the bicycle. In other words, when charging is required, the assisting force which assists pedaling by human power will be reduced. A voltage drop detection comparator data contained by A/D conversion of the voltage of a battery with certain reference voltages set in advance and outputs voltage drop detection signals. When the voltage drop detection signal is received by an assisting force variation control, a variation assisting force is output to warn the user that battery charge is low. The variation assisting force is obtained by reducing or varying almost to zero an assisting force calculated by an assisting force calculator. A PWM signal producer outputs a PWM signal in response to the assisting force or the variation assisting force to drive a motor of the bicycle.

20 Claims, 12 Drawing Sheets



L18: (4) reverse adj... | US 5806621 A | Tag: S | Doc: 3/4 | Format : KWIC

US-PAT-NO: 5806621

DOCUMENT-IDENTIFIER: US 5806621 A

See image for Certificate of Correction

TITLE: Electric power assisted bicycle

Detailed Description Text - DETX (17):

A heat sensitive resistance element 35 such as a thermistor is disposed between the Ni--Cd batteries 28a and 28b of the upper and lower layers. The heat sensitive resistance element 35 is connected to a charging connector 36 shown in FIG. 3 by way of a lead 35a. Accordingly, when charging is performed using the charger (not shown), the charger side (not shown) can supervise the temperature of the location of the Ni--Cd batteries 28a and 28b from the resistance value of the heat sensitive resistance element 35. Further, various fuses 37 and circuit parts such as a diode (not shown) for preventing a charging voltage of a reverse polarity from being supplied are mounted in the battery case assembly 25.

Detailed Description Text - DETX (30):

The PWM signal production means 104 produces and outputs, from assisting force data A or variation assisting force data HA supplied thereto by way of the assisting force variation warning means 110, a PWM signal 104a necessary to supply an assisting force from the motor 21. The PWM signal 104a is supplied to the gate of a field effect transistor FET by way of a gate driving circuit or the like not shown so that PWM driving of the motor 21 is performed.

Detailed Description Text - DETX (59):

The power source/resetting circuit section 201 includes a 12 V system and 5 V system power source 201a for stepping down the battery power source of, for example, a 24 V system and outputting stabilized power sources of a 12 V system and a 5 V system. Section 201 also includes a resetting circuit 201b which operates with the 5 V system power source. The 12 V system power source is used for the crankshaft rotational speed sensor 75 and as a gate controlling voltage for the field effect transistor FET for power for controlling energization of the motor 21. The 5 V system power source is used by a one-chip microcomputer 203, motor driving limitation means 210, a motor current detection circuit 204 and so forth.

Details | Text | Image | HTML | KWIC